

ham tips

August 1970 | Volume 30 Number 2

2- and 10-Meter Band Transceiver

A Practical, Simplified Approach to Module-Package Construction

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Have you ever had to pass up a transceiver that was "just the ticket" for your ham shack, but too complicated to tackle as a construction project?

If so, here's another chance to get that rig you've been searching for — a transceiver you can build and put to work without being an electronics wizard.

K2BBX has come up with a complete construction package for a 2- and 10-meter unit that can be successfully assembled by the ham operator having only moderate know-how and bench experience.

Easy-to-follow instructions eliminate many of the problems and bottlenecks most frequently encountered by the average builder. Included in the package are detailed photographs, mechanical layouts, component-placement data, and a ready-made dial card for the receiver frequency scale. In brief, here's a terrific opportunity for the ham club that's seeking a transceiver for either a group project or for informative discussion and new ideas on related projects.

Sets of instructions are now in preparation and should be available by September. If you're interested in getting a set for your own ham group, write to: Commercial Engineering Department, Section "SD," RCA Electronic Components, Harrison, New Jersey 07029.

The following article is a general description of the K2BBX 2- and 10-meter band transceiver and its most important features.



Figure 1: View of completed K2BBX transceiver with RCA HK-99 Star-maker microphone. Unit measures 8 inches in height, 14 inches in width, and 10 inches in depth, and has a carrying handle for easy portability.

Transceiver Features

- Push-to-talk operation
- Four meter positions ("S" meter, RF power output, final-amplifier grid current, and final-amplifier cathode current)
- Transmitter "spot" frequency in "receive" position
- Receiver sensitivity of less than $0.5 \mu\text{V}$
- Minimal package density (less than 0.7 cubic foot)
- "Sectionalized" modular design for simplicity
- Front panel automatic noise limiter
- Five transmitter crystal positions (including a front-panel crystal socket for VFO or external-crystal operation)
- Front-panel jack for external speaker or earphones
- Front panel adjustable squelch circuit
- Efficient transmitter power output (7 watts on 2-meter band; 10 watts on 10-meter band)
- Additional Applications (ideal for local CD communications)

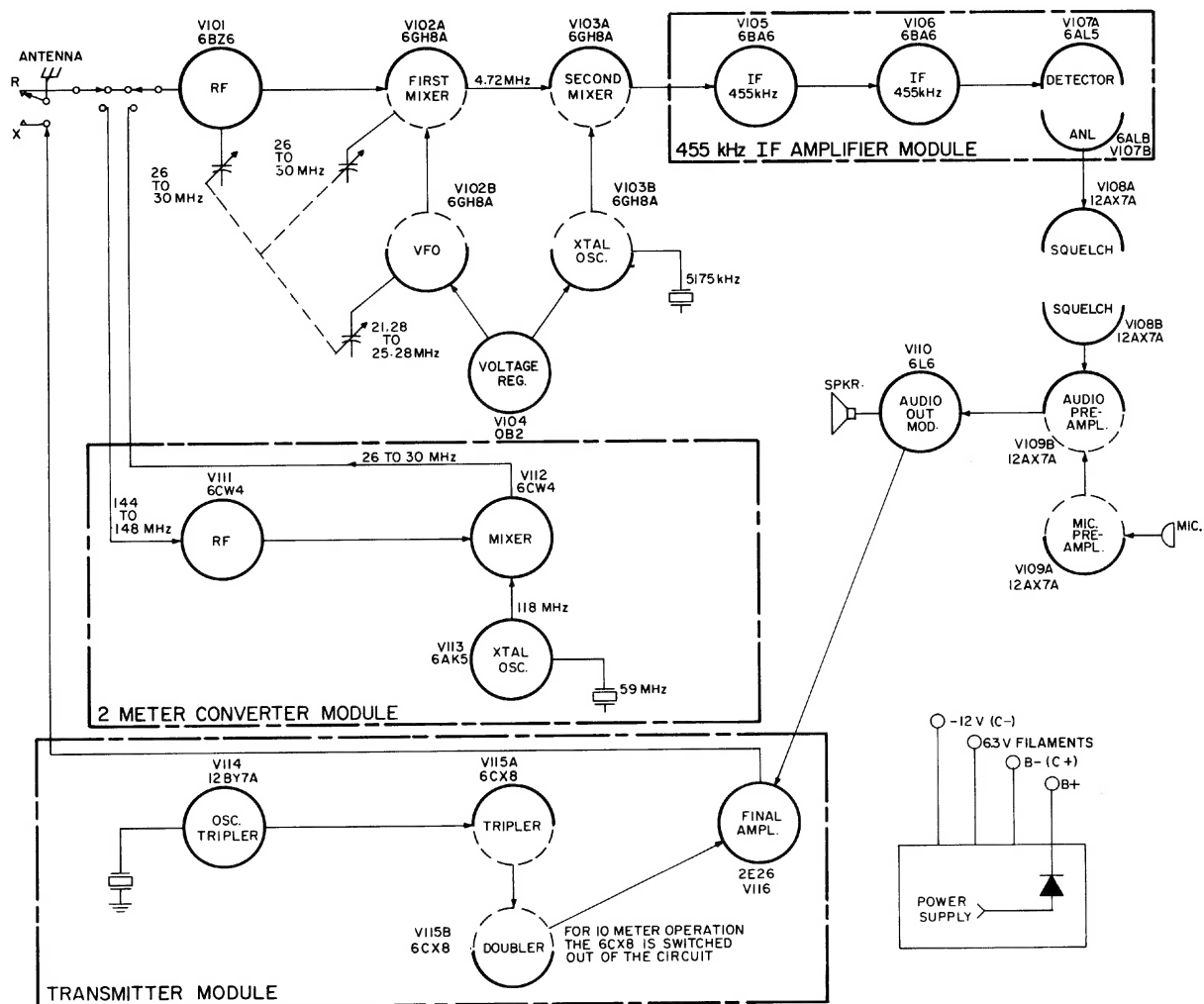


Figure 2: Block diagram of K2BBX 2- and 10-meter amateur-band transceiver.

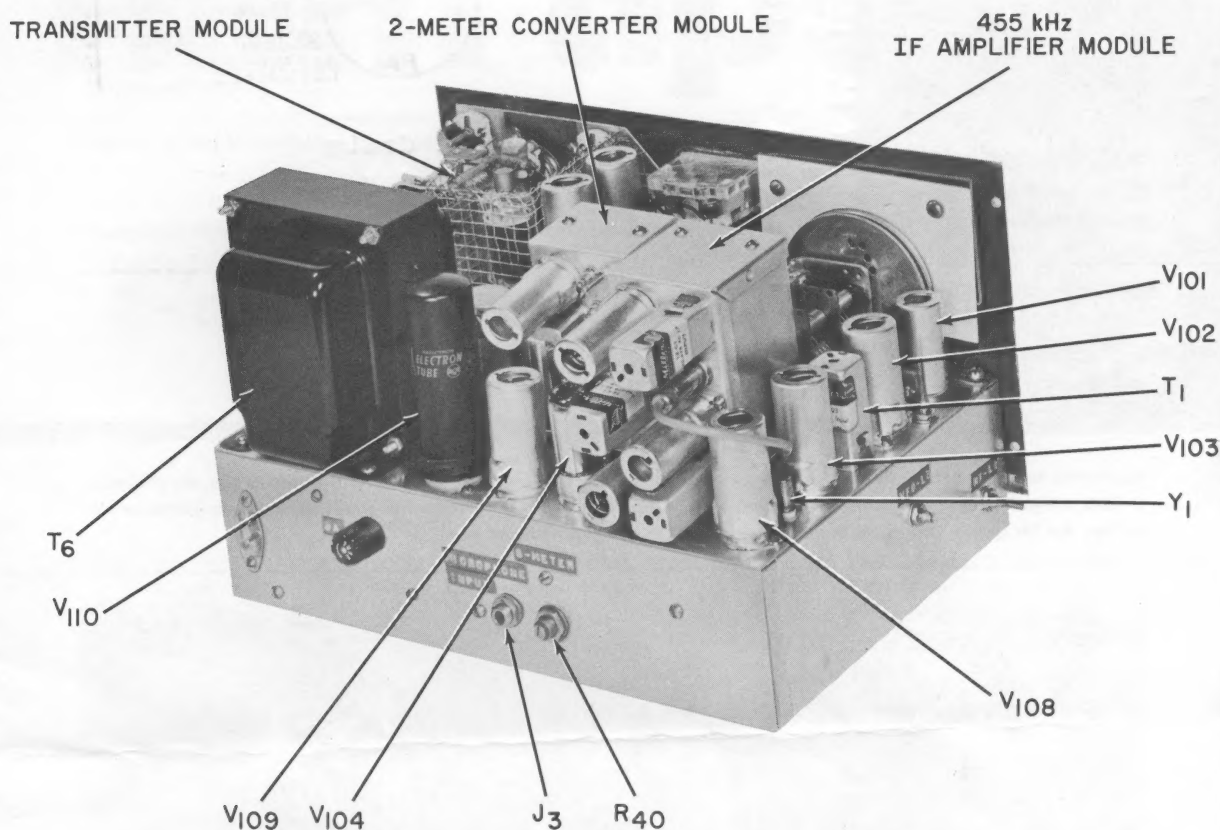


Figure 3: Interior rear view of transceiver showing layout of major components.

The K2BBX 2- and 10-meter amateur-band transceiver combines four major operating units in a compact, modular package approximately 8 inches high, 14 inches wide, and 10 inches deep. These four operating units consist of a main-chassis section containing the 10-meter receiver and power supply, a plug-in 455-kHz IF-amplifier module, a plug-in 2-meter converter module, and the transmitter module. Modular design eliminates many of the customary problems of wiring, and the total project is aided by the easy availability of reasonably priced components.

The 10-meter receiver is a double-conversion, superheterodyne type which covers the frequency range of 26 to 30 MHz with three tuned stages. Single-switch receiver operation connects a crystal-controlled 2-meter converter to the input of the 10-meter receiver. A frequency range of

144 to 148 MHz is tuned in the 2-meter "receive" position. The audio stages of the receiver function as the modulator-output, driver, and microphone-preamplifier stages.

The power supply consists of a single power transformer which provides a full-wave DC source for the high voltage, a 12-volt DC halfwave-bias supply, and a 6.3-volt AC filament supply.

The 455-kHz IF-amplifier module contains two IF-amplifier stages, an AM-diode detector stage, and a series-type automatic noise-limiter (ANL) stage.

The 2-meter converter module employs a 3-stage crystal-controlled circuit. Broad-band characteristics are attained through the use of over-coupled, double-tuned circuits in the RF stages.

The transmitter module circuit incorporates three RF stages consisting of a crys-

tal-controlled oscillator-tripler stage, a dual-section tube which serves as a tripler-doubler stage, and a non-multiplying final-amplifier stage. For 10-meter transmission, a 9-MHz crystal is used — connecting only the oscillator-tripler and final-amplifier stages.

For 2-meter transmission, an 8-MHz crystal is used in conjunction with all multiplying stages in the circuit.

The transceiver is made operational through either a push-to-talk switch in the microphone-cable connection or through a single-operation transmit/receive switch located on the front panel. Band changing is facilitated by single-switch selection on the receiver and double-switch selection on the transmitter. A front-panel jack is provided for earphones and muting of the internal speaker.

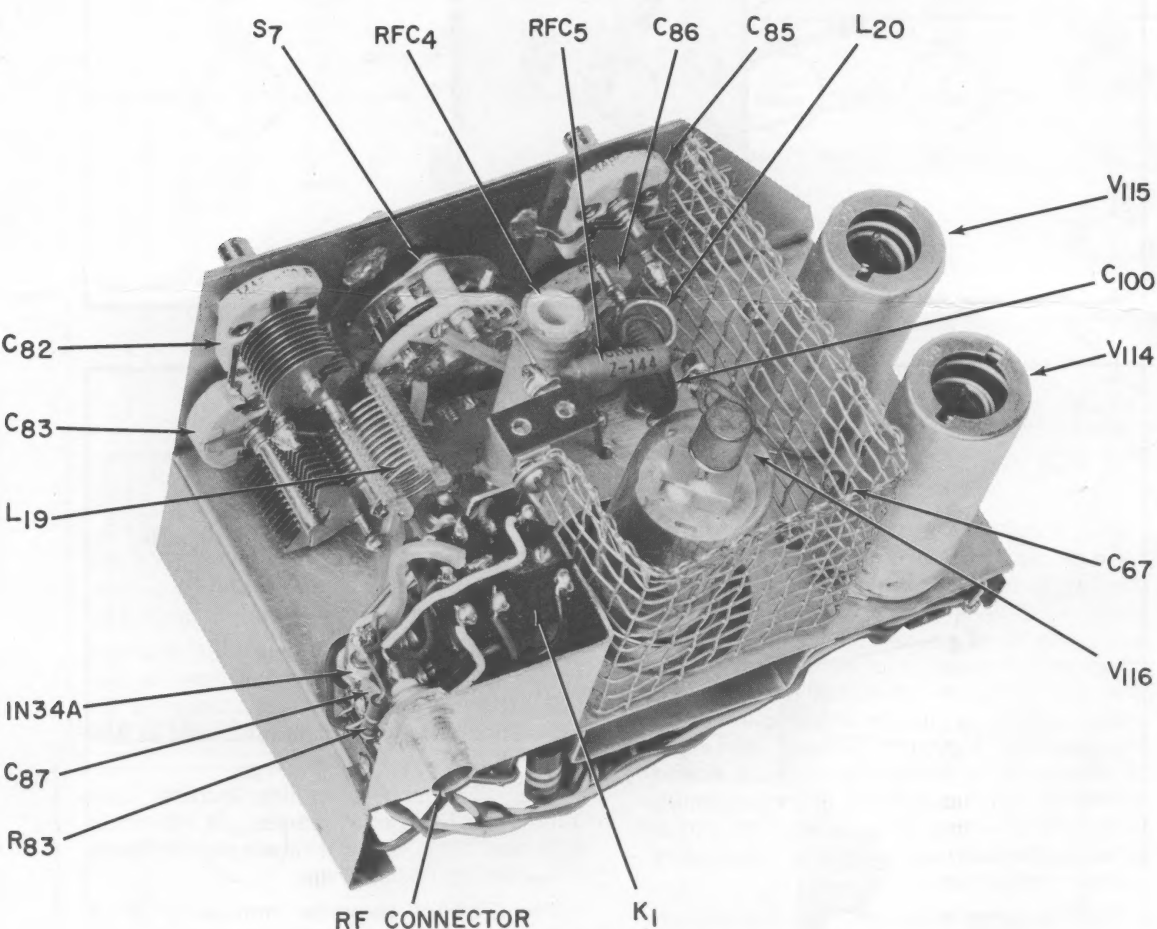


Figure 4: Top view of transmitter module.

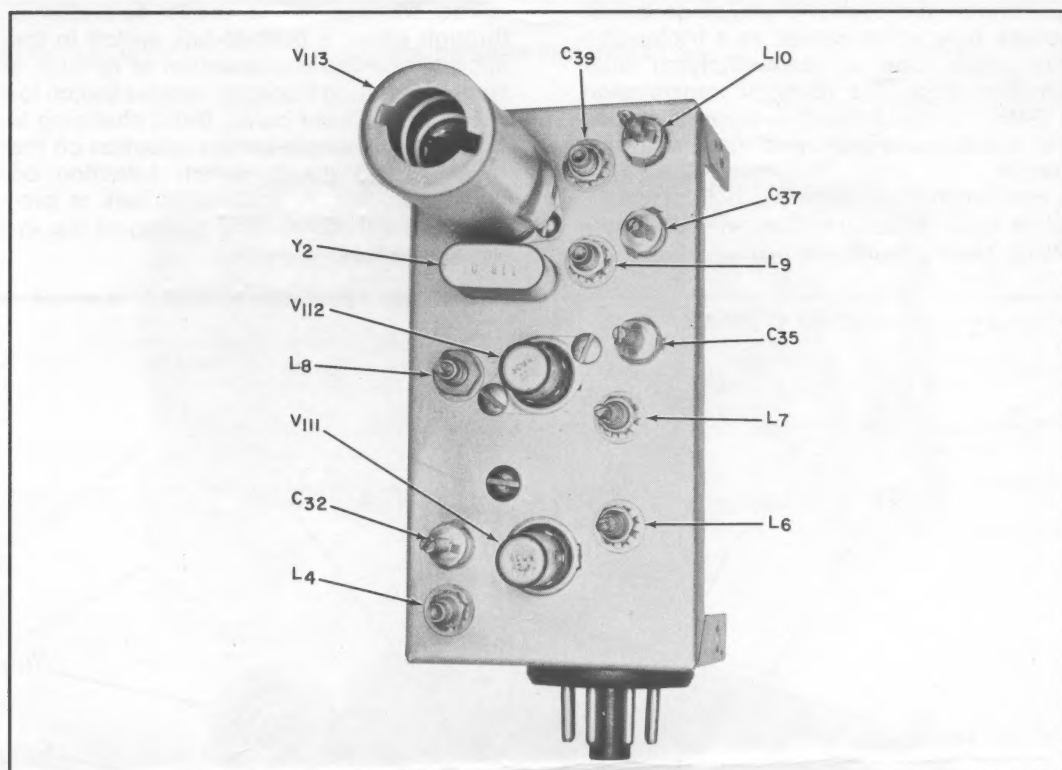


Figure 5: Top view of 2-meter converter module.

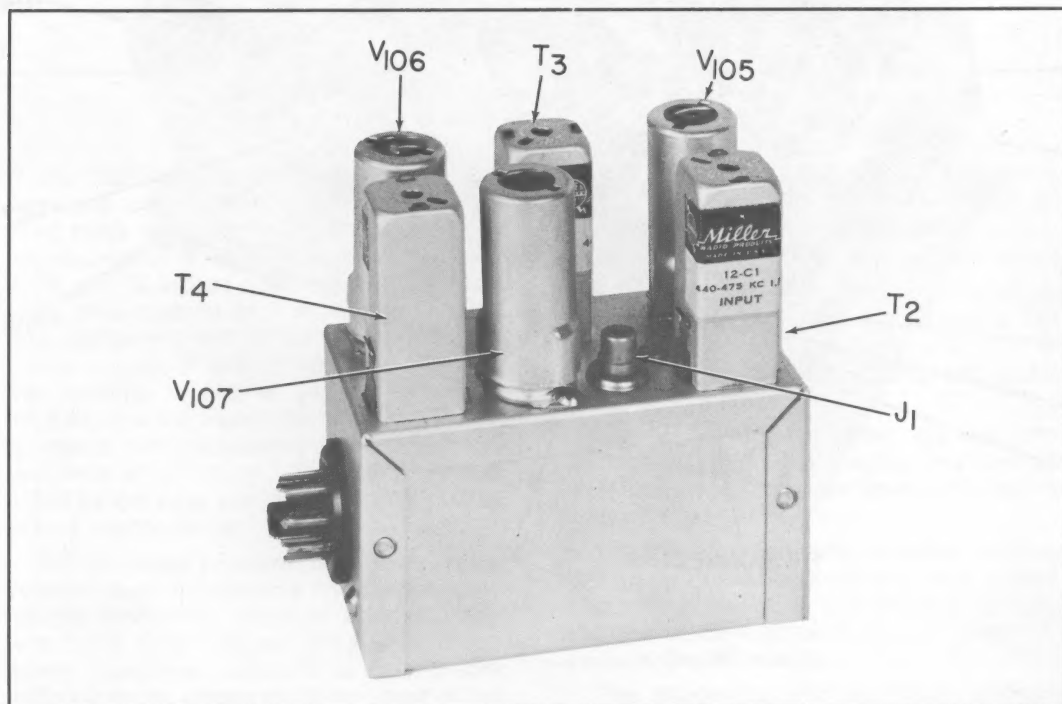


Figure 6: Top view of 455-kHz IF-amplifier module.

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